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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF MARKETS
CHARLES J. BRAND, Chief.

A PORTABLE FARM GRANARY[1]

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The transportation, handling and storage facilities of our grain marketing system make it necessary to hold supplies for certain periods of time at the point of production or at some point between the producing areas and the consuming centers. The early requirements of the consuming centers are usually supplied by the grain of those producers who must sell immediately after harvest for financial reasons. Occasionally it is possible, and desirable, for the producer to haul the grain directly from the threshing machine to the local elevator, but this is true of only a small amount of the grain tributary to any station.

The most economical storage of grain can be secured on the farm if the location of the farm and its operations make such storage possible. The type of farm granary, and its location, are questions which must be settled by the individual producer, with reference to the location of fields, local harvesting methods, and marketing conditions.

The experience of the producers has proven that a permanent farm granary is preferable to one or more portable granaries of smaller capacity, cheaper construction, and shorter life. A great many farmers in the Pacific Northwest who have stored their bulk grain in portable or "knockdown" granaries are replacing them with permanent structures. However, it is recognized that under certain conditions, and especially in connection with the present change from the bag handling to the bulk handling of grain, portable granaries of small capacity are necessary. In this pamphlet detailed plans are given for the first of a series of portable farm granaries, plans for which are being prepared by the Department of Agriculture to meet the present need.

This portable granary is designed to give the maximum storage to be obtained from an advantageous use of the most economical lengths of lumber. In the Pacific Northwest 8, 12, and 14 foot lengths of "dimension" lumber are available at the same price per thousand; 16 foot lengths have a higher unit price and 9, 10, 18, and 20 foot lengths are still higher in cost for the same actual quantity of lumber. The use of 8 foot studs, joists, and rafters, rather than 9 or 10 foot pieces, is therefore economical and also gives the compactness essential to portable bins. This bin is designed to be of sufficient strength to withstand hard usage and racking when being dragged over the ground, as well as the pressure of the grain when filled. This granary may be placed alongside the thresher and the grain spouted directly into it. One or more granaries should be provided for each setting of the machine.

The capacity of Granary No. 2 (8′ 0″x8′ 0″x16′ 0″) for which a detailed list of lumber is given (see page 2) is 720 bushels. Granaries of greater or less capacity can be made by increasing or decreasing the length, the width and depth remaining the same. Each foot of length provides a capacity of 46 bushels. Below are given the capacities of three suggested sizes with a complete bill of material for each.

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[1] The granary presented in this pamphlet was designed especially for the wheat producing areas of the Pacific Northwest. Inquiries relative to the handling and storage of bulk grain in this region should be addressed to the Bureau of Markets, 310 Worcester Building, Portland, Oregon.

Detailed List of Lumber and Bill of Material for Three Sizes of Granary.

GRANARY NO. 1. OVERALL LENGTH, 12 FEET. CAPACITY, 535 BUSHELS.

BILL OF MATERIAL.

2 pieces 6"x8", 14' 0"	112
1 piece 4"x6", 12' 0"	24
49 pieces 2"x6", 8' 0"	392
600 ft. 1"x6" or 1"x8" D. and M. or shiplap (includes roof)	600
	1,128 bd. ft. total.

1 pound 4d. nails
16 pound 8d. nails
3 pound 10d. nails
3 pound 20d. nails
} 23 lbs. nails total.
10 sets 3" hooks and eyes.
1 square of ready roofing with nails, etc.

GRANARY NO. 2. OVERALL LENGTH, 16 FEET. CAPACITY, 720 BUSHELS.

DETAILED LIST OF LUMBER.

Runners	2 6"x8", 18' 0"	
Cross ties	2 4"x6", 6' 0"	cut from 1 4"x6", 12' 0"
Joists	12 2"x6", 8' 0"	
Studs	32 2"x6", 8' 0"	
Rafters	11 2"x6", 8' 0"	
Bridging	18 2"x6", 1' 3"	cut from 2 2"x6", 8' 0"
Braces	6 1"x6", 10' 0"	select from sheathing.
Ribbons	2 1"x6", 16' 0"	select from sheathing.
Scabs	20 1"x6", 0' 6"	select from sheathing.
Roof ties	2 1"x6", 16' 0"	select from sheathing.
Walls and floor	650 bd. ft. 1"x6",	or 1"x8" D. and M. or shiplap.
Roof	150 bd. ft. 1"x6",	or 1"x8" D. and M. or shiplap.

BILL OF MATERIAL.

2 pieces 6"x8", 18' 0"	144
1 piece 4"x6", 12' 0"	24
57 pieces 2"x6", 8' 0"	456
800 ft. 1"x6" or 1"x" D. and M. or shiplap (includes roof)	800
	1,424 bd. ft. total.

1 pound 4d. nails
20 pound 8d. nails
4 pound 10d. nails
4 pound 20d. nails
} 29 lbs. nails total.
12 sets 3" hooks and eyes.
1½ squares of ready roofing with nails, etc.

GRANARY NO. 3. OVERALL LENGTH, 20 FEET. CAPACITY, 900 BUSHELS.

BILL OF MATERIAL.

2 pieces 6"x8", 22' 0"	176
1 piece 4"x6", 12' 0"	24
69 pieces 2"x6", 8' 0"	552
1,000 ft. 1"x6" or 1"x8" D. and M. or shiplap (includes roof)	1,000
	1,752 bd. ft. total.

2 pounds 4d. nails
25 pounds 8d. nails
5 pounds 10d. nails
5 pounds 20d. nails
} 37 lbs. nails total.
16 sets 3" hooks and eyes.
2 squares of ready roofing with nails, etc.

The granary constructed as shown in figure 2, with 2 1″x6″ boards down the center to tie the rafters together, can be easily filled to full capacity. A bed of straw should be placed over the grain and the whole covered with a tarpaulin. This gives a roof that will protect the grain and can be removed easily. The rafters serve the double purpose of providing a support for the roof boards, if used, and of tying the studs at the top to resist the pressure of the grain.

A more substantial roof than that of tarpaulin is recommended. Figure 6 shows the construction and use of removable roof panels. Such a roof is to be preferred to a permanently fixed one, consisting of boards nailed directly to the rafters with occasional scuttles for filling the granary, because the top can be removed and the granary filled to its maximum capacity without difficulty.

To provide for emptying, it is suggested that at the center of each side, two or three of the boards be cut the length between studs. These boards may be pried loose to permit the grain to flow out.

From the standpoint of portability the smaller sizes of granaries are to be preferred. Two small bins require little more material to give the same capacity than one large bin. To provide additional storage space at small cost two 535-bushels granaries can be placed parallel to each other a few feet apart, a temporary floor laid between them, and end walls erected.

Plans are being prepared by the Department of Agriculture covering the erection of two types of "knockdown" granaries, and two types of permanent granaries. These plans should be ready for distribution at an early date.

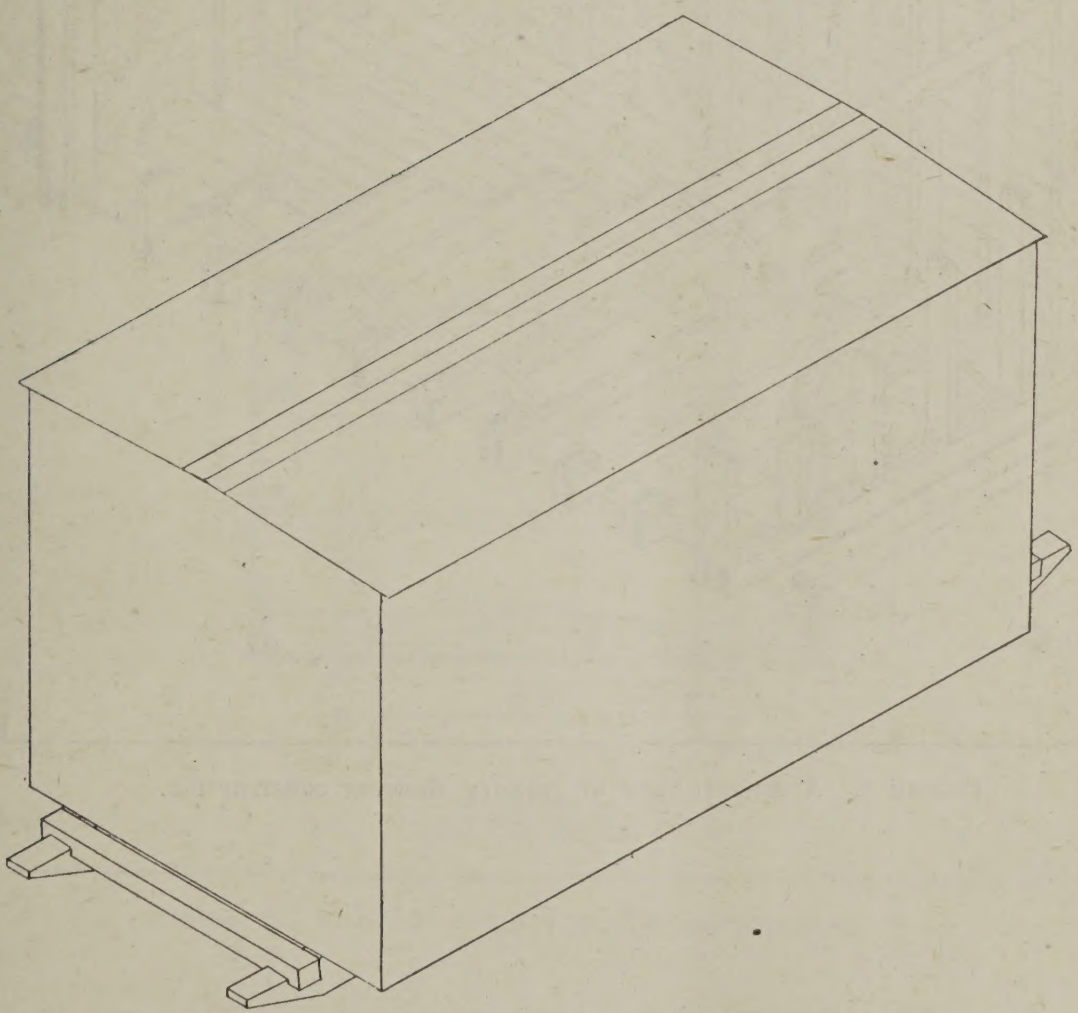

FIGURE 1. Finished appearance of portable farm granary.

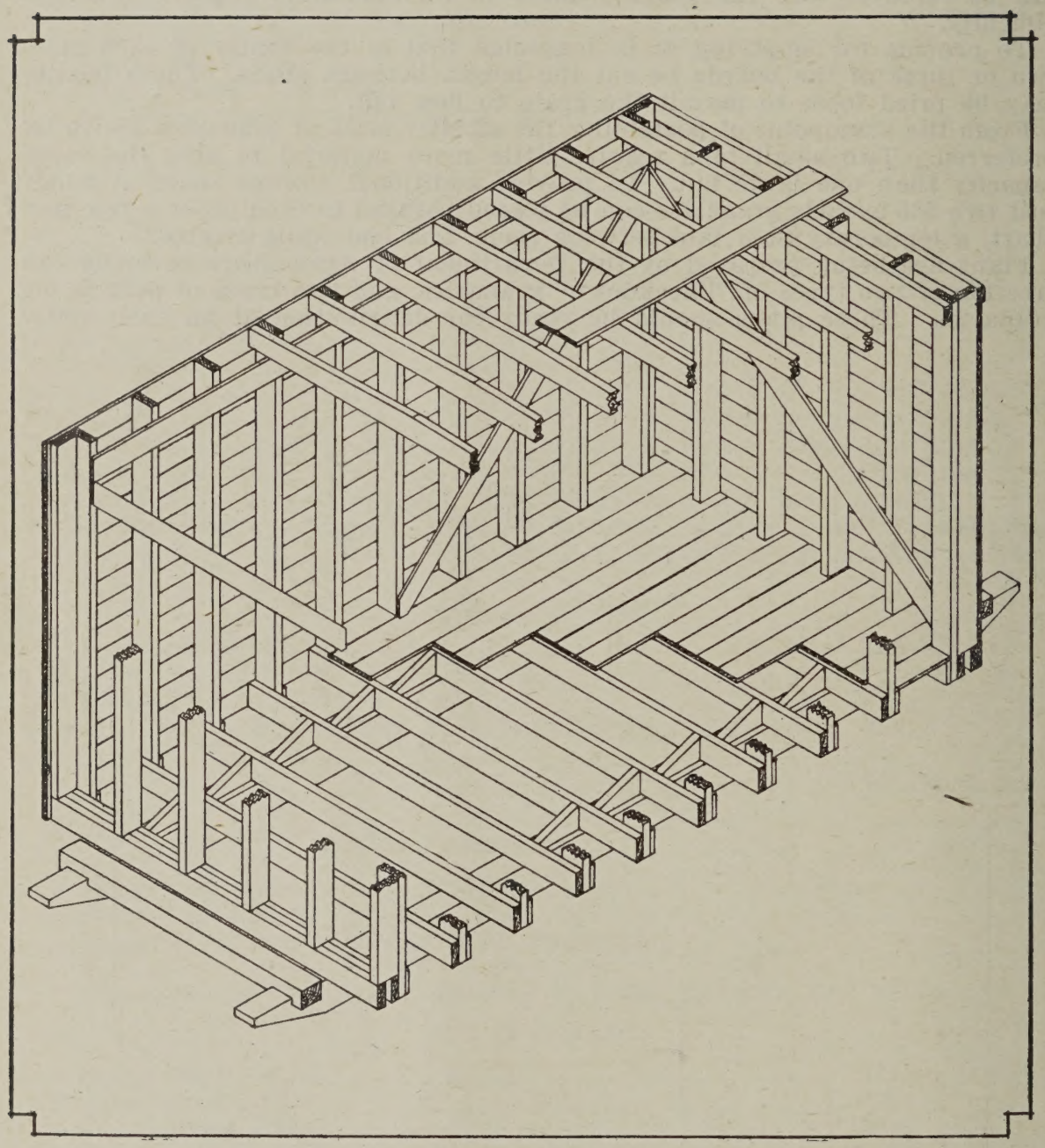

FIGURE 2. A general view of granary showing construction.

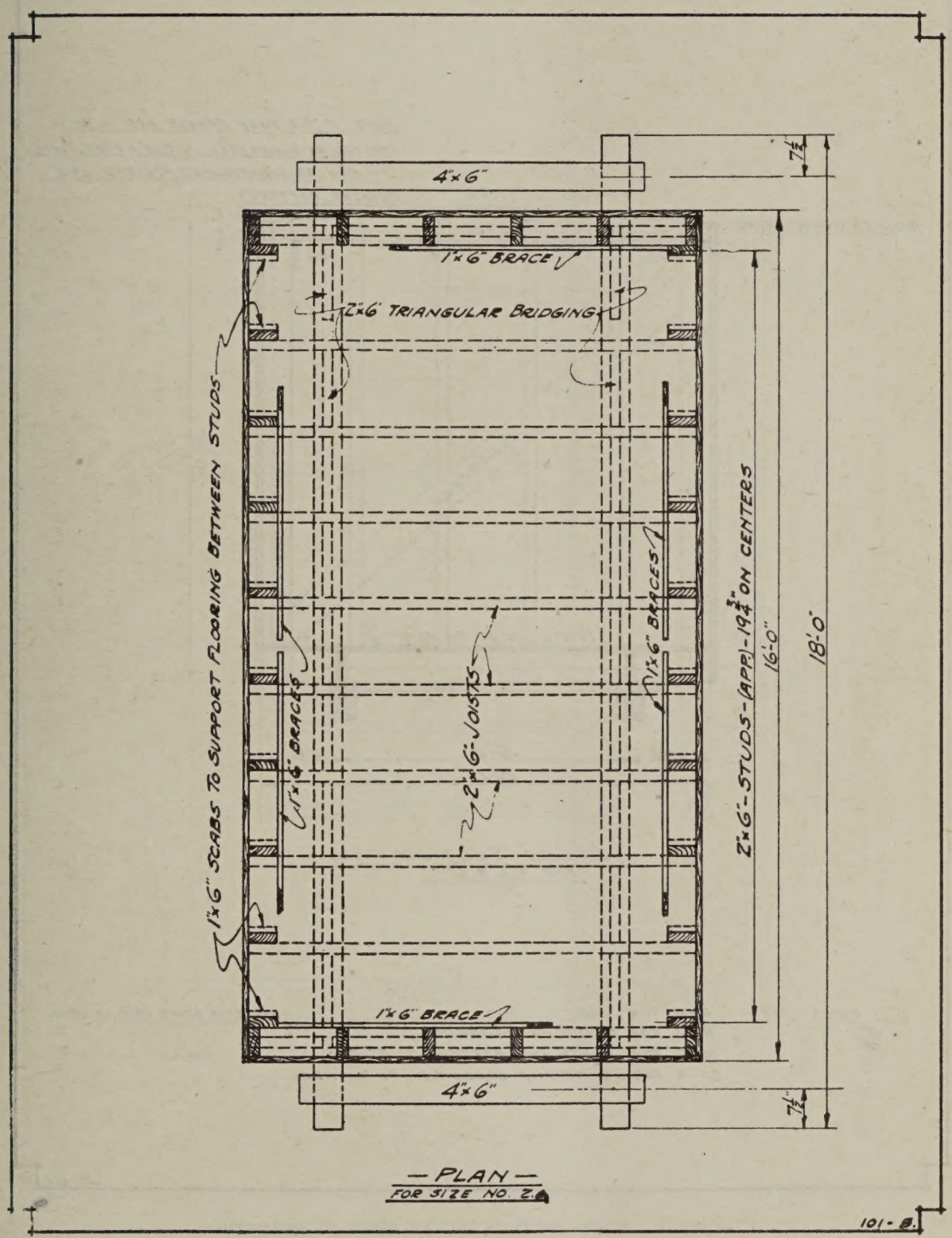

FIGURE 3. Plan for size No. 2. Top view of granary.

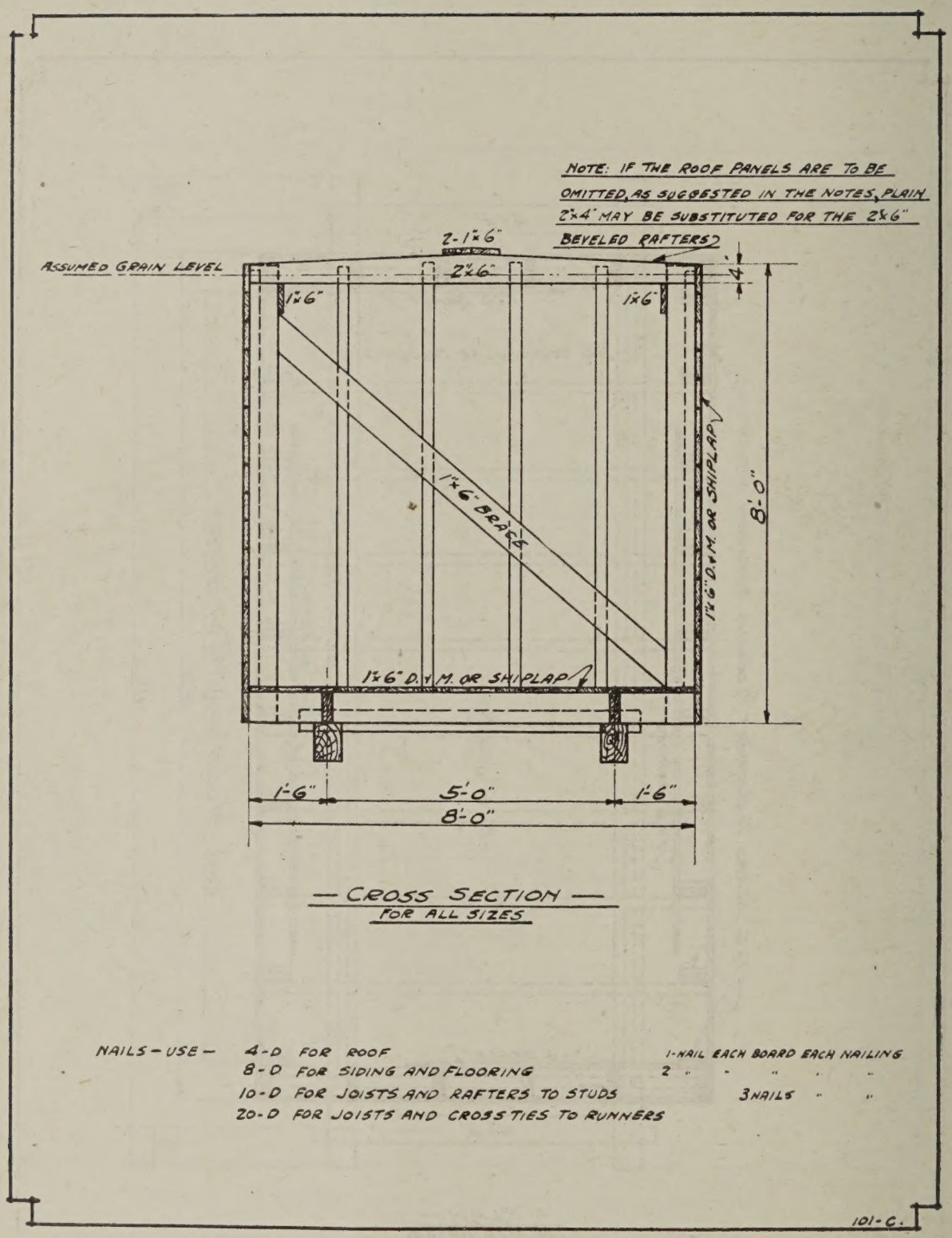

FIGURE 4. Cross section for all sizes of granaries.

Nails—Use	4-d	for roof	1 nail each board each nailing
	8-d	for siding and flooring	2 nails each board each nailing
	10-d	for joists and rafters to studs	3 nails each nailing
	20-d	for joists and cross ties to runners	

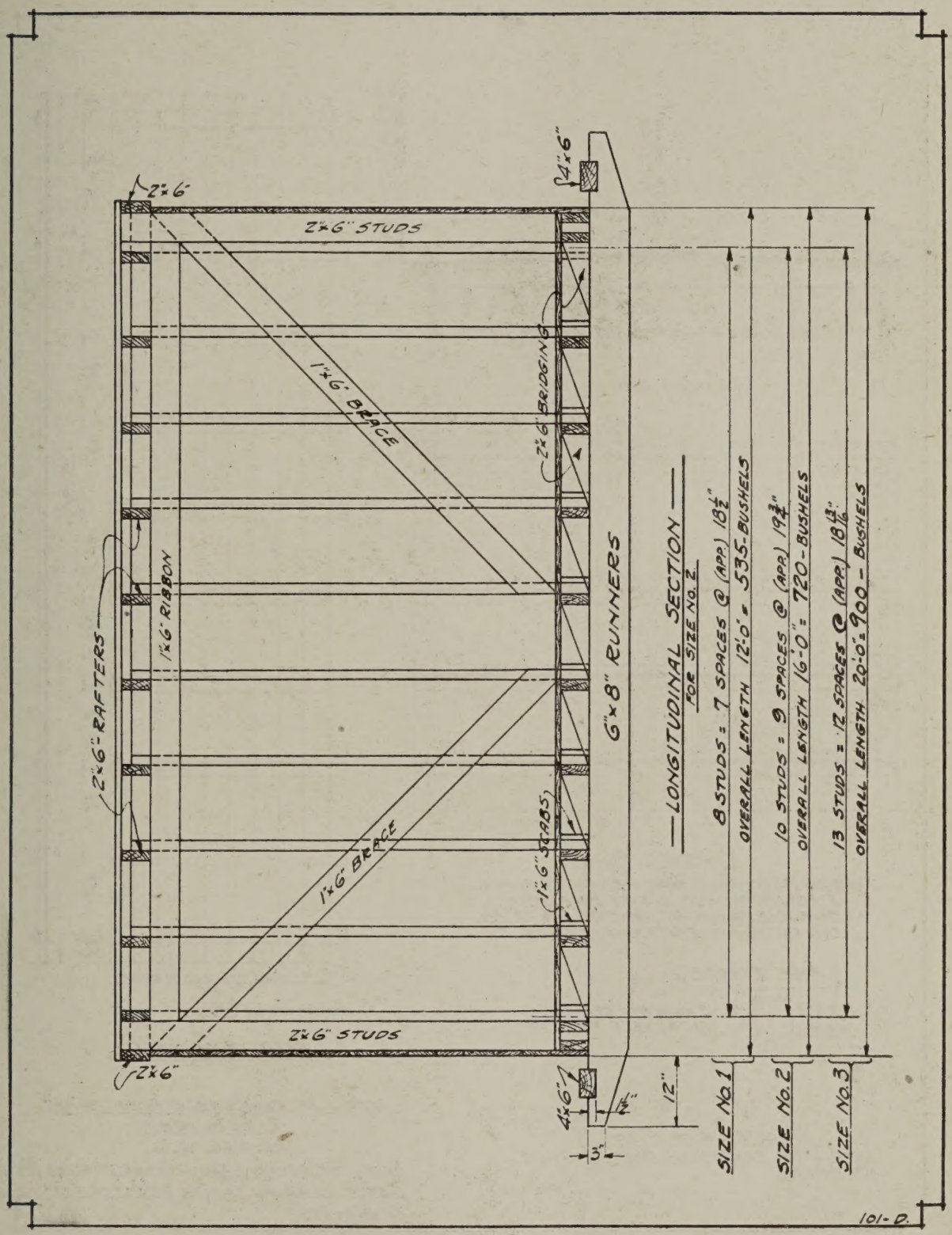

FIGURE 5. Longitudinal section of granary.

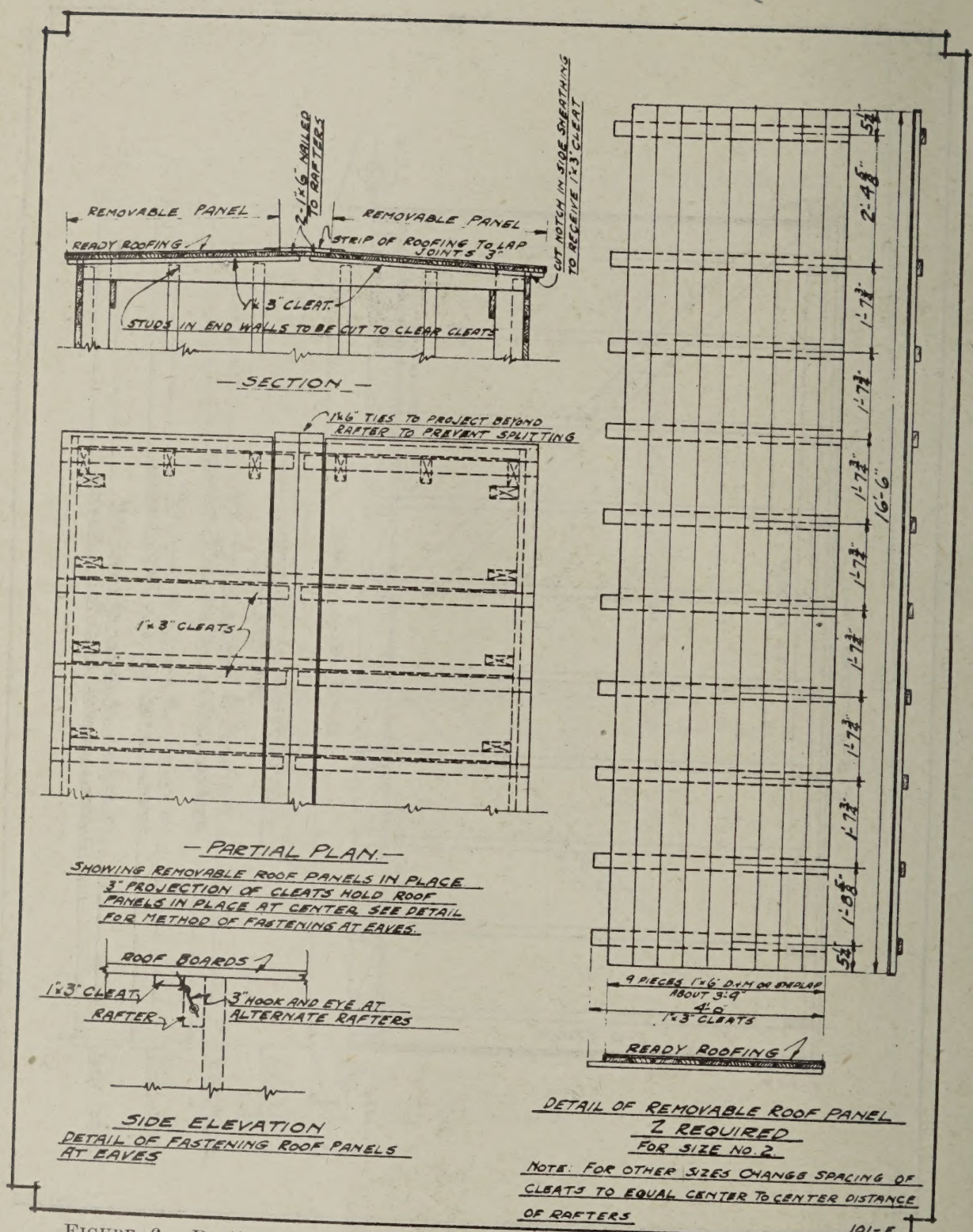

FIGURE 6. Partial plan, side elevation, and detail of removable roof panel. Scale ½"x⅜—1'-0"